

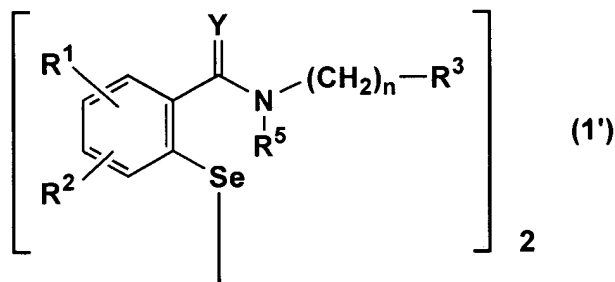
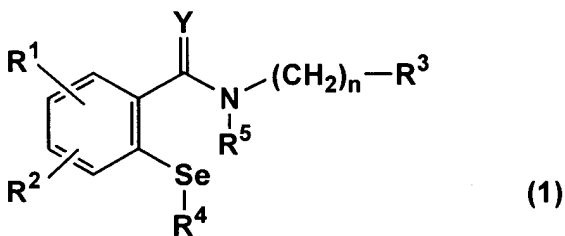
### AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### Listing of Claims:

Claims 1-12 (Canceled)

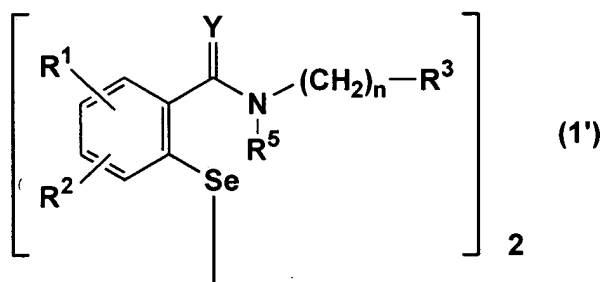
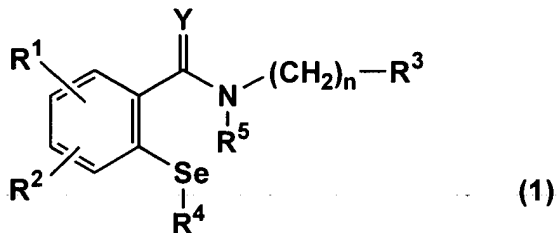
Claim 13 (Previously Presented): A method for reduction of a substrate with thioredoxin reductase, comprising combining the thioredoxin reductase, the substrate and NADPH under conditions to reduce the substrate, the substrate comprising a substance selected from the group consisting of a compound represented by the following general formula (1) or (1') and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof:



wherein R<sup>1</sup> and R<sup>2</sup> independently represent a hydrogen atom, a halogen atom, a trifluoromethyl group, a nitro group, a C<sub>1</sub>-C<sub>6</sub> alkyl group, or a C<sub>1</sub>-C<sub>6</sub> alkoxy group, or R<sup>1</sup> and R<sup>2</sup> may combine together to represent methylenedioxy group; R<sup>3</sup> represents an aryl group, an aromatic heterocyclic group, a 5- to 7-membered cycloalkyl group, or a 5- to 7-membered cycloalkenyl group, and the aryl group, the aromatic heterocyclic group, the cycloalkyl group, and the cycloalkenyl group may be substituted with one or more substituents; R<sup>4</sup> represents a hydrogen atom, a hydroxyl group, a -S-glutathione group, a -S- α-amino acid group, or an aralkyl group whose aryl moiety may be substituted with one or more substituents; R<sup>5</sup> represents a hydrogen atom or a C<sub>1</sub>-C<sub>6</sub> alkyl group, or R<sup>4</sup> and R<sup>5</sup> may combine together to represent single bond; Y represents oxygen atom or sulfur atom; n represents an integer of from 0 to 5; and the selenium atom may be oxidized.

Claim 14 (Previously Presented): The method according to claim 13 wherein the substrate comprises a substance selected from the group consisting of 2-phenyl-1,2-benziso-selenazol-3(2H)-one or a ring-opened form thereof and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof.

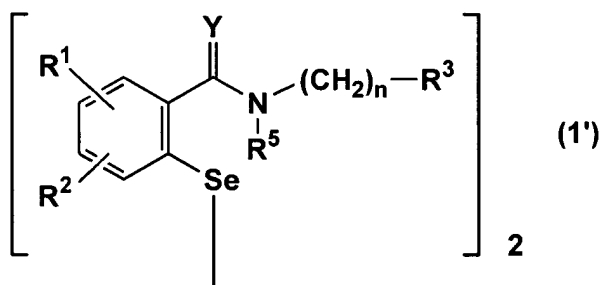
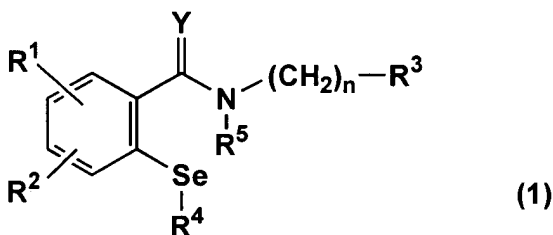
Claim 15 (Currently Amended): A method of enhancing peroxidase activity of thioredoxin reductase, comprising combining NADPH, thioredoxin reductase, thioredoxin and a substrate under conditions to enhance peroxidase activity of thioredoxin reductase, the substrate comprising a substance selected from the group consisting of a compound represented by the following general formula (1) or (1') and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof:



wherein  $R^1$  and  $R^2$  independently represent a hydrogen atom, a halogen atom, a trifluoromethyl group, a nitro group, a  $C_1$ - $C_6$  alkyl group, or a  $C_1$ - $C_6$  alkoxy group, or  $R^1$  and  $R^2$  may combine together to represent methylenedioxy group;  $R^3$  represents an aryl group, an aromatic heterocyclic group, a 5- to 7-membered cycloalkyl group, or a 5- to 7-membered cycloalkenyl group, and the aryl group, the aromatic heterocyclic group, the cycloalkyl group, and the cycloalkenyl group may be substituted with one or more substituents;  $R^4$  represents a hydrogen atom, a hydroxyl group, a -S-glutathione group, a -S-  $\alpha$ -amino acid group, or an aralkyl group whose aryl moiety may be substituted with one or more substituents;  $R^5$  represents a hydrogen atom or a  $C_1$ - $C_6$  alkyl group, or  $R^4$  and  $R^5$  may combine together to represent single bond; Y represents oxygen atom or sulfur atom; n represents an integer of from 0 to 5; and the selenium atom may be oxidized.

Claim 16 (Previously Presented): The method according to claim 17 wherein the substrate comprises a substance selected from the group consisting of 2-phenyl-1,2-benzisoselenazol-3(2H)-one or a ring-opened form thereof and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof.

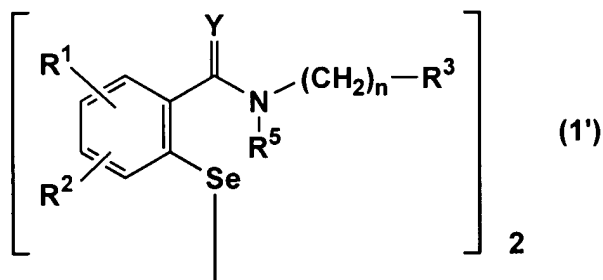
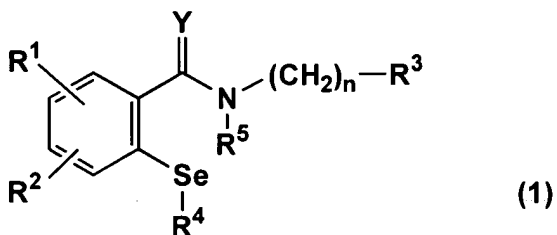
Claim 17 (Currently Amended): A method of oxidizing reduced thioredoxin by a substrate, the method comprising combining reduced thioredoxin and a substrate under conditions to oxidize the reduced thioredoxin with the substrate, the substrate comprising a substance selected from the group consisting of a compound represented by the following general formula (1) or (1') and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof:



wherein  $R^1$  and  $R^2$  independently represent a hydrogen atom, a halogen atom, a trifluoromethyl group, a nitro group, a  $C_1$ - $C_6$  alkyl group, or a  $C_1$ - $C_6$  alkoxy group, or  $R^1$  and  $R^2$  may combine together to represent methylenedioxy group;  $R^3$  represents an aryl group, an aromatic heterocyclic

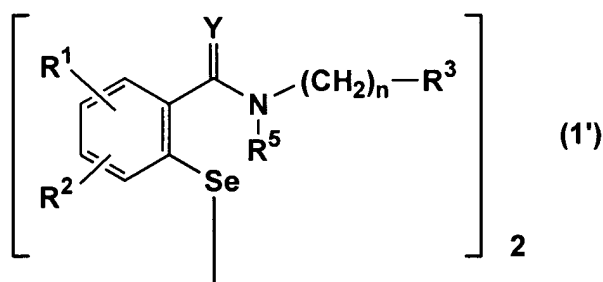
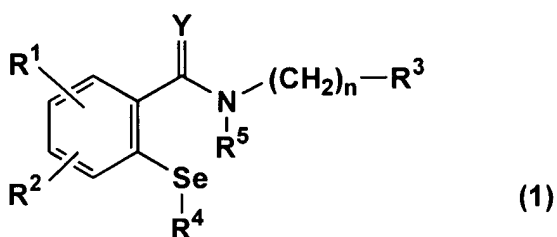
group, a 5- to 7-membered cycloalkyl group, or a 5- to 7-membered cycloalkenyl group, and the aryl group, the aromatic heterocyclic group, the cycloalkyl group, and the cycloalkenyl group may be substituted with one or more substituents;  $R^4$  represents a hydrogen atom, a hydroxyl group, a -S-glutathione group, a -S-  $\alpha$ -amino acid group, or an aralkyl group whose aryl moiety may be substituted with one or more substituents;  $R^5$  represents a hydrogen atom or a  $C_1$ - $C_6$  alkyl group, or  $R^4$  and  $R^5$  may combine together to represent single bond; Y represents oxygen atom or sulfur atom; n represents an integer of from 0 to 5; and the selenium atom may be oxidized.

Claim 18 (Currently Amended): A method for reducing a peroxide comprising ~~oxidizing reduced thioredoxin in a peroxidase reaction wherein the thioredoxin has been reduced by thioredoxin reductase and NADPH in the presence in a substrate~~ combining thioredoxin, thioredoxin reductase, NADPH and a substrate under conditions to reduce the peroxide, the substrate comprising a substance selected from the group consisting of a compound represented by the following general formula (1) or (1') and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof:



wherein  $R^1$  and  $R^2$  independently represent a hydrogen atom, a halogen atom, a trifluoromethyl group, a nitro group, a  $C_1$ - $C_6$  alkyl group, or a  $C_1$ - $C_6$  alkoxy group, or  $R^1$  and  $R^2$  may combine together to represent methylenedioxy group;  $R^3$  represents an aryl group, an aromatic heterocyclic group, a 5- to 7-membered cycloalkyl group, or a 5- to 7-membered cycloalkenyl group, and the aryl group, the aromatic heterocyclic group, the cycloalkyl group, and the cycloalkenyl group may be substituted with one or more substituents;  $R^4$  represents a hydrogen atom, a hydroxyl group, a -S-glutathione group, a -S-  $\alpha$ -amino acid group, or an aralkyl group whose aryl moiety may be substituted with one or more substituents;  $R^5$  represents a hydrogen atom or a  $C_1$ - $C_6$  alkyl group, or  $R^4$  and  $R^5$  may combine together to represent single bond; Y represents oxygen atom or sulfur atom; n represents an integer of from 0 to 5; and the selenium atom may be oxidized.

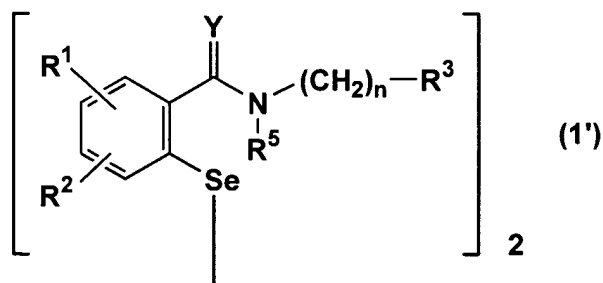
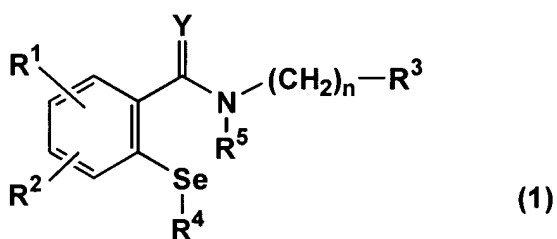
Claim 19 (Currently Amended): A method of preventing peroxidation of a substance comprising combining thioredoxin, thioredoxin reductase and NADPH with a substrate under conditions to prevent peroxidation of the substance, the substrate ~~comprising a substance~~ being selected from the group consisting of a compound represented by the following general formula (1) or (1') and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof:



wherein  $R^1$  and  $R^2$  independently represent a hydrogen atom, a halogen atom, a trifluoromethyl group, a nitro group, a  $C_1$ - $C_6$  alkyl group, or a  $C_1$ - $C_6$  alkoxy group, or  $R^1$  and  $R^2$  may combine together to represent methylenedioxy group;  $R^3$  represents an aryl group, an aromatic heterocyclic group, a 5- to 7-membered cycloalkyl group, or a 5- to 7-membered cycloalkenyl group, and the aryl group, the aromatic heterocyclic group, the cycloalkyl group, and the cycloalkenyl group may be substituted with one or more substituents;  $R^4$  represents a hydrogen atom, a hydroxyl group, a -S-glutathione group, a -S-  $\alpha$ -amino acid group, or an aralkyl group whose aryl moiety may be

substituted with one or more substituents;  $R^5$  represents a hydrogen atom or a  $C_1$ - $C_6$  alkyl group, or  $R^4$  and  $R^5$  may combine together to represent single bond; Y represents oxygen atom or sulfur atom; n represents an integer of from 0 to 5; and the selenium atom may be oxidized.

Claim 20 (Previously Presented): A method for enhancing peroxidase activity of thioredoxin reductase in vivo which comprises administering a peroxidase activity enhancing effective amount of a substrate to a mammal, the substrate comprising a substance selected from the group consisting of a compound represented by the following general formula (1) or (1') and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof:



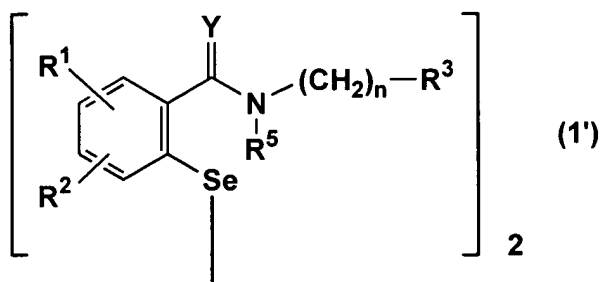
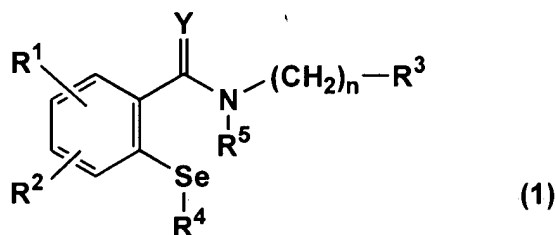


wherein R<sup>1</sup> and R<sup>2</sup> independently represent a hydrogen atom, a halogen atom, a trifluoromethyl group, a nitro group, a C<sub>1</sub>-C<sub>6</sub> alkyl group, or a C<sub>1</sub>-C<sub>6</sub> alkoxy group, or R<sup>1</sup> and R<sup>2</sup> may combine together to represent methylenedioxy group; R<sup>3</sup> represents an aryl group, an aromatic heterocyclic group, a 5- to 7-membered cycloalkyl group, or a 5- to 7-membered cycloalkenyl group, and the aryl group, the aromatic heterocyclic group, the cycloalkyl group, and the cycloalkenyl group may be substituted with one or more substituents; R<sup>4</sup> represents a hydrogen atom, a hydroxyl group, a -S- glutathione group, a -S- α-amino acid group, or an aralkyl group whose aryl moiety may be substituted with one or more substituents; R<sup>5</sup> represents a hydrogen atom or a C<sub>1</sub>-C<sub>6</sub> alkyl group, or R<sup>4</sup> and R<sup>5</sup> may combine together to represent single bond; Y represents oxygen atom or sulfur atom; n represents an integer of from 0 to 5; and the selenium atom may be oxidized.

Claim 21 (Previously Presented): The method according to claim 20 wherein the mammal is a human.

Claim 22 (Previously Presented): A method of reducing a peroxide in vivo which comprises administering an peroxide reducing effective amount of a substrate to a mammal, the substrate comprising a substance selected from the group consisting of a compound represented by the following general formula

(1) or (1') and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof:

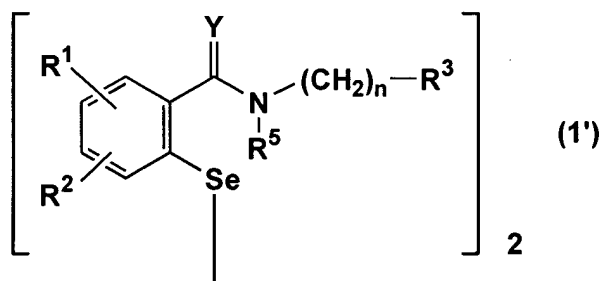
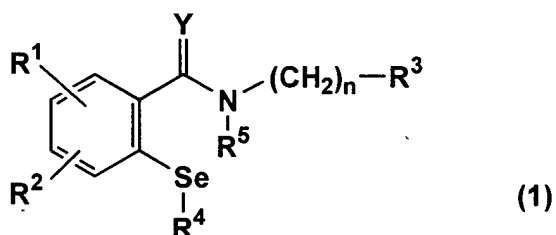


wherein  $R^1$  and  $R^2$  independently represent a hydrogen atom, a halogen atom, a trifluoromethyl group, a nitro group, a  $C_1$ - $C_6$  alkyl group, or a  $C_1$ - $C_6$  alkoxy group, or  $R^1$  and  $R^2$  may combine together to represent methylenedioxy group;  $R^3$  represents an aryl group, an aromatic heterocyclic group, a 5- to 7-membered cycloalkyl group, or a 5- to 7-membered cycloalkenyl group, and the aryl group, the aromatic heterocyclic group, the cycloalkyl group, and the cycloalkenyl group may be substituted with one or more substituents;  $R^4$  represents a hydrogen atom, a hydroxyl group, a -S-glutathione group, a -S-  $\alpha$ -amino acid group, or an aralkyl group whose aryl moiety may be substituted with one or more substituents;  $R^5$  represents a hydrogen atom or a  $C_1$ - $C_6$  alkyl group, or  $R^4$  and  $R^5$  may combine together to represent single bond; Y represents oxygen atom or sulfur atom; n represents an integer of from 0 to 5; and the selenium atom may be oxidized.

Claim 23 (Previously Presented): The method according to claim 22 wherein the mammal is a human.

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Claim 24 (Currently Amended): A method of preventing peroxidation of a substance in vivo by oxidizing reduced thioredoxin in a peroxidase reaction proceeded by thioredoxin reductase comprising administering a peroxidation preventing effective amount of a substrate to a mammal, the substrate ~~comprising a substance~~ being selected from the group consisting of a compound represented by the following general formula (1) or (1') and a physiologically acceptable salt thereof, and a hydrate thereof and a solvate thereof:



wherein  $R^1$  and  $R^2$  independently represent a hydrogen atom, a halogen atom, a trifluoromethyl group, a nitro group, a  $C_1$ - $C_6$  alkyl group, or a  $C_1$ - $C_6$  alkoxy group, or  $R^1$  and  $R^2$  may combine together to represent methylenedioxy group;  $R^3$  represents an aryl group, an aromatic heterocyclic group, a 5- to 7-membered cycloalkyl group, or a 5- to 7-membered cycloalkenyl group, and the aryl group, the aromatic heterocyclic group, the cycloalkyl group, and the cycloalkenyl group may be substituted with one or more substituents;  $R^4$  represents a hydrogen atom, a hydroxyl group, a -S-glutathione group, a -S-  $\alpha$ -amino acid group, or an aralkyl group whose aryl moiety may be

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substituted with one or more substituents; R<sup>5</sup> represents a hydrogen atom or a C<sub>1</sub>-C<sub>6</sub> alkyl group, or R<sup>4</sup> and R<sup>5</sup> may combine together to represent single bond; Y represents oxygen atom or sulfur atom; n represents an integer of from 0 to 5; and the selenium atom may be oxidized.

Claim 25 (Previously Presented): The method according to claim 24 wherein the mammal is a human.